

Exhibit "B"

Part 6 of 10

5.11 CULTURAL RESOURCES

5.11.1 Affected Environment

Region of Influence

The ROI for this project area would include SBMR, the SRAA, WAAF, and the alignment for construction of Helemanō Trail.

Native Hawaiian History and Tradition

Schofield Barracks and South Range Acquisition Area

The central plateau, in which SBMR is situated, is associated with a number of legends and oral traditions (Anderson 1998; SRP 2002; Sterling and Summers 1978, 134-137; Tomonari-Tuggle 1997). Tomonari-Tuggle (1997, 8-12) researched the significance of the central plateau in Hawaiian tradition and found that the area was the site of sacred activities (Fornander 1969, II-85) as well as the residence of O'ahu chiefs (Nakuina 1897, 90). The traditional information recorded by McAllister (1933) concerning the former presence of three heiau corroborates the religious importance of the plateau. The central O'ahu plateau also served as a place of refuge for Hawaiian nobles shortly after contact (Kamakau 1992, 136). Sterling and Summers (1978) also mention that the heiau sites and their significance have been recorded by earlier researchers.

Native Hawaiian resources identified at SBMR and WAAF include numerous archaeological sites and natural settings like Mount Ka'ala and Kolekole Pass. The locations of the three former heiau, the Oahunui Stone, and some of the lo'i systems may be of importance to Native Hawaiians.

The West Range Impact Area contains a number of places mentioned in Hawaiian legends and histories. The three heiau discussed by McAllister (1933) and mentioned above lie within this area. Possible remnants of the Hale'au'au heiau have not been relocated following recent surveys, while the Kumakali'i Heiau in Pukaloa Gulch, and a heiau reported to have been also used for burials in Kalena Gulch, are reported to have been destroyed (Anderson 1998, 3-24, 3-33). Above the Schofield Barracks ordnance impact area, on top of Mount Ka'ala at the summit of the Wai'anae Mountains, lies a bog that McAllister recorded as a former fishpond.

Kolekole Pass is at the southwest end of the South Range and forms a low crossing point through the Wai'anae Mountains. A prehistoric trail crossed the pass linking Wai'anae Uka with Wai'anae Kai. Near Kolekole Pass within the South Range is the Kolekole Stone, which is known as a "sacrificial stone," but the story that victims were decapitated over this stone may be a fairly recent rendition. Older Hawaiians say the stone represents the Guardian of the Pass, a woman named Kolekole (Anderson 1998, 3-33; Social Research Pacific (SRP) 2003).

One traditional Hawaiian feature, the O'ahunui Stone, had been depicted on early survey maps as lying on the south side of Kaukonahua Stream on the southern boundary of SBER.

The stone was not found during archaeological surveys in the area where it is shown on the early maps. Some Hawaiians believe that the stone was moved and is now located in Waikakalaua Stream valley south of SBER (Robins and Spear 2002a, 2002b).

Mount Ka'ala is mentioned in Hawaiian mythology as a mountain that the goddess Hi'iaka, the sister of Pele, climbed on her way back to the island of Hawai'i from Kaua'i. From the top she could see the destruction that her sister Pele, enraged over her long absence, had wrought by causing a flow of lava over her lands in Puna (Anderson 1928, 274). According to Hawaiian traditions, the Ka'ala bog, on the west side of the summit, was once a freshwater pond used as a fishpond. Kamaoha was the goddess of this pond, in which shore fish and a kind of mullet were caught. The informant who reported the pond to McAllister called it a luakini fishpond (1933), which might indicate its use only by chiefs.

Located outside SBMR are the birthing stones of Kūkaniloko, one of only two locations in the Hawaiian islands that were considered appropriate places for the births of children of kapu chiefs (the highest ranking nobles) and thus one of the most sacred places on the island. All women of the royal line were expected to give birth here. Kūkaniloko also served as a pu'uhonua or place of refuge (Ii 1963, 135). Associated with Kūkaniloko was the now destroyed Ho'olonopahu, a waihou heiau, where the umbilical cords of the newborn ali'i were cut and sacred drums announcing the birth of ali'i (chiefs or nobility) were stored (Fornander 1996, 272; Beckwith 1970, 377). At the vernal and autumnal equinoxes, the sun, when viewed from Kūkaniloko, would set directly behind the summit of Mount Ka'ala. Thus, it has been suggested that these places may have been of importance in Hawaiian astronomy and calendric determinations (Kyselka 1993, in Tomonari-Tuggle and Yoklavich 2000, V-11).

In summary, ATIs on SBMR include Mount Ka'ala, Kolekole Pass with the associated Kolekole Stone, the former location of the O'ahunui stone, and the three heiau reported in McAllister. The remnant lo'i field systems in the stream valleys might also be regarded as a significant complex. One of these may be Kukui-o-Lono, the location of a number of wetland taro fields, originally developed by the high chief Kukuiolono. Handy and Handy say that this was "a place famous in legend" (1972, 465). Two of the informants interviewed during the oral history studies for SBMR indicated that there are other known places of traditional significance on SBMR, mostly ahu, but they were unwilling to disclose the locations (SRP 2003).

Certain elements within Wai'anae Uka contribute to the traditional landscape of the area. The stream valleys at the base of the Wai'anae Range seem to have formed important agricultural locations separated from one another by upland forest areas that may have been used for hunting of birds and collecting of other forest resources. Trails crossed the area linking farmers with their fields at the local level and linking Wai'anae Uka with Wai'anae Kai across Kolekole Pass. Separate from the agricultural pursuits of the commoners were the activities of the ali'i, or nobility, in this area. For them, Wai'anae Uka and the surrounding ahupua'a were the locations of sacred activities, especially the births of the highest ranking children, rituals at several heiau by kahuna (priests), and perhaps the making of astronomical observations from Kūkaniloko over Mount Ka'ala. Certain resources collected in this area,

such as the fish from the Mount Ka'ala luakini fishpond and the feathers of forest birds, were reserved for the chiefs. Training for warfare and lua, a Hawaiian martial art, also took place here, and it was in this area, particularly at the chiefly site of Lihue, where political power was exercised by the high chiefs.

Wheeler Army Airfield

Like SBMR, WAAF occupies the central plateau of O'ahu. Its location formed part of the area that comprised Wai'anae Uka and was important in the traditional activities, history, and lore discussed above in connection with SBMR. The area would have been near the prehistoric chiefly center of Lihue. Despite the traditional importance of this area, there are few indications of ATIs on WAAF. A limited archaeological survey has not identified any prehistoric or early historic Hawaiian sites. Previous studies did not identify sacred places or important traditional cultural places on WAAF (Belt Collins 2000a; Tomonari-Tuggle and Bouthillier 1994, 9-15).

Access to Cultural Sites

Access to cultural sites on Army land is now restricted, but the Army, in accordance with policy, provides access for legitimate reasons to traditional places. Such access is provided within the limitations imposed by mission requirements and public safety concerns. No formal policy governs access at SBMR, and access requests are handled on a case-by-case basis in coordination with Range Control.

Historic Overview

Schofield Barracks Military Reservation

Hawaiians lived in the central plateau of O'ahu hundreds of years before European contact. In pre-Contact times, the area had large villages and extensive agricultural complexes in order to support a large population and a political center at Lihue (Tomonari-Tuggle 1997, 2002).

The boundaries of SBMR, with the inclusion of the northern part of WAAF, correspond with the traditional Hawaiian land unit called Wai'anae Uka, a land-locked portion of the ahupua'a of Wai'anae, which extended from the west coast of O'ahu over the Wai'anae Mountains and across to the top of the Ko'olau Range. Stretching across the central plateau in a long band from the top of the Wai'anae Range to the top of the Ko'olau Range, Wai'anae Uka was relatively isolated from the rest of its ahupua'a. As a result the trail that connected Wai'anae Uka with Wai'anae Kai, the coastal portion of the ahupua'a, by way of Kolekole Pass, was of strategic importance. Kolekole Pass is not far from the base of Mount Ka'ala, the highest summit on O'ahu, an important place in Hawaiian religion, ceremony, legend, and perhaps celestial observations.

Wai'anae Uka is known in Hawaiian traditions as an important training ground for chiefs and was the location of important prehistoric battles. Archaeological evidence indicates the presence of traditional Hawaiian agricultural field systems, both dryland and irrigated taro wetland fields (lo'i) along the streams that flow through SBMR. Three heiau are known to have been located in the area.

Oral histories have identified this area as a training ground for warriors with several longhouses, although no specific localities have been identified (SRP 2003). The area around Kolekole Pass was used by young students studying the art of lua, which involved dislocating joints and replacing them (Alvarez 1982, 6).

In probably the mid to later 1600s the O'ahu paramount chief Kuali'i led his armies against the rebellious chiefs of Ewa and Waialua at a battle on the land of Kalena and the plains of Hale'au'au in what would now be the West Range Impact Area on SBMR (Fornander 1969, II-281).

Archaeological evidence indicates limited use of the upland plateau areas, although the scarcity of sites could partly reflect a higher rate of ground disturbance from modern use on the plateau from ranching and military training activities. Early historic descriptions indicate that lush native forest covered most of the plateau lands between the stream valley farms. These forests may have been used to hunt birds for food and feathers and to gather other upland resources, especially valuable woods such as koa and sandalwood.

Between about 1816 and 1830, under the direction of the Hawaiian chiefs, these forests were intensively cut to obtain sandalwood for trade to China (Kamakau 1992). In the 1830s a missionary described the area as one of "nearly naked plains" (Bishop 1916, 45). After the sandalwood boom ended, wood may still have been gathered as firewood to stoke the boilers of the whaling ships that called at Honolulu Harbor over the following 40 years (Kuykendall 1968). Following deforestation, the land was used for animal grazing. After 1850, the Crown leased much of the 'ahupua'a to rancher John Meek to raise cattle, sheep, and horses.

At the time of the Great Mahele (a major land reform, discussed in Section 3), the entire Wai'anae ahupua'a was claimed as crown lands by Kamehameha III. Thus, there are no commoner claims or testimonies to provide evidence of the cultural use of the area at that time. Half of the 'ili (small land subdivision) of Kalena along Kalena Gulch was claimed by the ali'i Pāhoa and the other half was awarded to John Meek. Kalākaua established Leilehua Ranch, building a house at the location of the present golf course clubhouse in the SBMR cantonment area. However, some small-scale agriculture must have continued in the stream valleys at least through the middle part of the 19th century, as early missionary records indicate the presence of villages large enough to support schools on the central plateau (Kamakau 1992).

In the late 1800s, James Dowsett owned the land that is now the Main Post and operated it as a ranch. After the annexation of Hawai'i in 1898, the United States took possession of the property and in 1909 established Schofield Barracks as a base for mobile defense troops. Construction began in 1913. Runways were added to the installation in 1914, and several schools were developed before and during World War I. Upon the end of the war the Hawaiian Division was established at SBMR, and substantial installation improvements were made (Tomonari-Tuggle and Bouthillier 1994).

In the late 1930s defense mobilization increased, and the installation's population swelled to 20,000. More construction took place, including the excavation of underground tunnel

complexes. During World War II, SBMR became the Army's single largest garrison. Massive mobilization took place all over the islands, and SBMR housed tens of thousands of servicemen and women (Tomonari-Tuggle and Bouthillier 1994).

After the war, the Hawaiian Infantry Training Center was established at SBMR, and upon the end of the Korean War the 25th Infantry Division returned to its home post at SBMR, where it has remained the principal occupant, although it shares the post with other brigades from the Hawai'i National Guard and the US Army Reserves. The Army constructed a great deal of housing on the former open space areas at the west end of the cantonment area and built more housing during the late 1950s and 1960s (Tomonari-Tuggle and Bouthillier 1994).

Wheeler Army Airfield

During the prehistoric period, the lands on which WAAF is located formed part of the politically and spiritually important central plateau of O'ahu. The northern part of the installation falls within Wai'anae Uka, whose importance to Native Hawaiians was discussed at the beginning of this chapter. The southern part lies within the 'ili of Waikakalaua, which is now part of the ahupua'a of Waikele in 'Ewa district, but may once have been an 'ili of Wai'anae. The land may once have been part of Lihue, when it was a major chiefly center, although there is no evidence that any settlement was located on WAAF.

Traditional settlement in the area may have followed a pattern similar to that on SBMR, although no archaeological evidence has been found to substantiate this. Farming would have been concentrated in the gulches along the two main streams flowing through the base, Wai'eli and Waikakalaua. Agricultural features have been identified upstream in each gulch and downstream where they join to form Waikele Stream. The plateau lands were probably covered in native forest, including koa and sandalwood, and used for bird hunting and collection of wood and other forest products.

As part of the central plateau and the crown lands of Wai'anae Uka, the nineteenth century history of WAAF reflects that of SBMR, with sandalwood collection, harvesting of firewood for whaling ships, and ranching each in succession playing the major role in the area's economy. In the early 1900s pineapple cultivation became established on the flat plateau lands of WAAF and surrounding areas. To transport the pineapples, the O'ahu Rail and Land Company built a railway that made its way up to the central plateau through what would become WAAF.

WAAF was established as a military installation in 1922 on land identified as former Crown Lands of the Kingdom of Hawai'i. Until the late 1920s the runway field was simply a grass and dirt field. During the 1930s the field was upgraded and new buildings were constructed, including houses, hangars, and a fire station. WAAF was severely damaged during the Japanese attack on December 7, 1941, and after the attack two new runways were added. In 1947 WAAF was moved to US Air Force control and then put in caretaker status in 1948 until 1951, when the Korean War began. WAAF remained in Air Force control until 1991, when it was returned to the Army (Tomonari-Tuggle and Bouthillier 1994).

Previous Consultations and Reports

Traditional Cultural Properties Surveys

Tomonari-Tuggle researched the significance of the central plateau of O'ahu in Hawaiian tradition and found that the area was the site of sacred activities, as well as the residence of O'ahu chiefs (Nakuina 1897, 90; Tomonari-Tuggle 1997, 8-12; Fornander 1969, II-85). The disturbed remnants of heiau (McAllister 1933) corroborate the religious importance of the plateau. The central O'ahu plateau also served as a place of refuge for ali'i, or Hawaiian nobility, early after contact (Kamakau 1992, 136).

SRP conducted an oral history study to locate TCPs and ATIs (as defined in Chapter 3, Section 3.11) at SBMR, as defined in Section 3. Through oral interviews, SRP was informed that there were a number of ATIs, but because of "fear of exposing knowledge about their location, [the informant] would not discuss what these were or where they were located" (SRP 2003, 30). The oral testimony included descriptions of several longhouses, which were training grounds for warriors. Informants also related the sanctity of the area, which once had stone structures of ceremonial significance, such as heiau and shrines. SRP concludes that SBMR includes several ATIs. In some cases, a natural place that may have limited or no archaeological remains may still be considered an ATI.

Historic Buildings Surveys

Patricia Alvarez prepared a history of SBMR in 1982. The 1993 Schofield Barracks Real Property Master Plan included a survey of all the buildings in the cantonment area (Belt Collins 1993). This was followed in 1996 by a feasibility study for upgrading quads C and D while preserving historic integrity (Belt Collins 1996). Mason Architects documented and evaluated all buildings as well as other historic structures in the SBMR cantonment area that were built before 1951 in connection with the development of the 2000 Schofield Barracks Cultural Resource Management Plan by Belt Collins Hawai'i (2000b). This plan provided guidance for managing historic buildings in the cantonment area of SBMR. Mason Architects also documented all historic buildings and structures at WAAF built before 1953 (Tomonari-Tuggle and Bouthillier 1994) and the results of this study were integrated into the 2000 WAAF Cultural Resources Management Plan (Belt Collins 2000a). USARHAW has also inventoried historic housing on six subinstallations, including SBMR, as part of the Residential Communities Initiative (RCI).

Archaeological Surveys

Previous archaeological survey work in the SBMR cantonment area has been conducted by Bouthillier et al. (1995), O'Hare et al. (1993), McIntosh et al. (1995a, 1995b), and Williams et al. (1995). Recently, Robins and Spear (2002a, 2002b) conducted Phase I, II, and III surveys at SBMR. Robins and Spear surveyed selected areas, including limited subsurface sampling. Belt Collins (2000b) wrote a cultural resource management plan covering the five archaeological sites/historic localities identified in the SBMR cantonment area. All five sites relate to military use or to the development of SBMR (IARII 2003).

Parts of SBER have been surveyed on foot; and additional areas have been surveyed from the air but that acreage is unknown. Archaeologists have also surveyed a linear trail 3.5 miles

(5.6 kilometers) long within SBER. Eleven sites (two agricultural sites and nine historic military sites) have been recorded (Robins and Spear 2002a, 2002b). A twelfth site, the O'ahunui Stone, has a site number but has not been located.

WAAF and surrounding areas in the central plateau have received archaeological investigations (Rosendahl 1977; Griffin and Yent 1977; Powell 1984; Hammatt et al. 1988; summarized in Tomonari-Tuggle and Bouthillier 1994, 47-48, as cited in IARII 2003). Compliance surveys have revealed few archaeological remains because this area has undergone extensive land modification, primarily from agricultural (pineapple cultivation), residential, and military use (Tomonari-Tuggle and Bouthillier 1994, 47). Cultural resources that have been found include enclosures, irrigation canals, rock alignments, and terraces (IARII 2003).

In 2003, Garcia and Associates (GANDA) completed surveys of the SRAA, the footprints of the BAX, QTR1, and footprints of all construction projects at SBMR, the Helemanō easement, and at WAAF (GANDA 2003e). This data was not available for the DEIS but is included here.

Cultural Landscape Pilot Project

To assist in planning for the development of an ICRMP for SBMR and WAAF, IARII conducted a pilot project to develop a GIS database for USAG-HI using a cultural landscape framework. The purpose of the project was to integrate natural and cultural resource data, military training data, and military land management variables into a GIS database compatible with that maintained by the ITAM program. This database would be used to implement the management procedures of the ICRMP. SBMR is one of only three US Army installations to participate in this pilot project (Tomonari-Tuggle et al. 2000).

Known Prehistoric and Historic Resources

Schofield Barracks Military Reservation

Table 5-29 provides an overview of prehistoric and historic resources identified at SBMR and WAAF, as well as their NRHP status. Table 5-30 provides a list of identified historic properties at SBMR, WAAF, the SRAA, and the Helemanō Trail alignment.

Two SBMR properties are listed on the National Register of Historic Places: the Schofield Barracks Confinement Facility (Stockade) and the Schofield Barracks Historic District (Figure 5-41). The Schofield Barracks Historic District includes 176 contributing buildings as well as 10 other contributing sites, structures, and objects, including Macomb Gate and Entry, Carter Hall, and the Health Clinic. The 1924 fire station was also evaluated as eligible. An additional 104 buildings built before 1951 that lie outside the Historic District have been recommended as eligible. Forty additional buildings are now or will be over 50 years old by 2007. Surveys conducted at the following project locations did not reveal any cultural resources: Virtual Fighting Training Facility (S2), Tactical Vehicle Wash (S6), Information Systems Facility (S9), and Mission Support Training Facility (S10).

Table 5-29
Summary of Known Cultural Resources at Schofield Barracks Military Reservation, South Range Acquisition Area, and Wheeler Army Air Field

	Total Archaeological Sites	Sites Listed, Eligible, or needing DE	Area Surveyed for Archaeological Sites	Buildings over 50 years Old	Buildings Listed, Eligible, or Needing DE
Main Post (SBMR, SBW, and SBS)	90	85 (DE)	820 acres (332 hectares)	439	177 listed 193 DE
SRAA	53	53 (DE)	120 acres (48.6 hectares)	None	Unknown
East Range	11	11 (DE)	890 acres (360 hectares)	Unknown	Unknown
WAAF	5	1 (DE)	50 acres (20.2 hectares)	273	7 listed 264 DE
Helemanō Trail	None	None	Unknown (entire easement)	0	0

Source: IARII 2003

Note: "DE" or "determination of eligibility" means a site or building that has not yet been found ineligible for the NRHP and therefore must be treated as eligible pending such a finding.

Table 5-30
Known Cultural Resources at Schofield Barracks Military Reservation, South Range Acquisition Area, and Wheeler Army Air Field

Location	State Site No.	Site Description
SBS	8-0214	Kolekole Stone
SBW	4-0212	Luakini fishpond
SBW	8-9516	Elou Cliff trail
SBW	50-80-04-0215	Haleauau heiau (destroyed)
SBW	50-80-04-0217	Heiau (destroyed)
SBW	50-80-08-0213	Kumakali'i heiau (destroyed)
SBE	50-80-09-0204	Single stone
SBMR	Schofield Barracks Historic District	Historic district
SBMR	Stockade	Historic building
SBMR	Fire Station	Historic building
SBS	50-80-08-5385	Road section
SBS	50-80-08-5386	Alignment
SBS	50-80-08-5387	Mound complex
SBS	50-80-08-5388	Terrace/mound complex
SBS	50-80-08-5389	Terrace/mounds/align
SBS	50-80-08-5390	Mounds
SBS	50-80-08-5391	Terrace/mound/encl
SBS	50-80-08-5392	Agricultural fields
SBS	50-80-08-5393	Field terrace/berms/'auwai
SBS	50-80-08-5394	irrigation pondfield/'auwai
SBS	50-80-08-5395	Historic road
SBS	50-80-08-5396	'Auwai
SBS	50-80-08-5399	Alignments

Table 5-30
Known Cultural Resources at Schofield Barracks Military Reservation, South
Range Acquisition Area, and Wheeler Army Air Field *(continued)*

Location	State Site No.	Site Description
SBS	50-80-08-5397	C-shape
SBS	50-80-08-5400	Terrace
SBS	50-80-08-5401	'Auwai
SBS	50-80-08-5407	Alignment
SBS	50-80-08-5408	'Auwai
SBS	50-80-08-5409	Road
SBS	50-80-08-5410	Stream terraces
SBS	50-80-08-5412	Mound
SBS	50-80-08-5413	Enclosure/align/mounds/walls
SBS	50-80-08-5414	Linear depression
SBS	50-80-08-5415	Dry land agricultural terraces
SBS	50-80-08-5416	Terraces/enclosure
SBS	50-80-08-5417	Terraces/mounds
SBS	50-80-08-5418	Agricultural complex
SBS	50-80-08-5419	Terraces with 'auwai
SBS	50-80-08-5420	Terrace/mound
SBS	50-80-08-5421	Irrigation agricultural complex
SBS	50-80-08-5422	Terrace/mound complex
SBS	50-80-08-5424	Mounds
SBS	50-80-08-5423	Agricultural complex
SBS	50-80-08-5425	Wall section
SBS	50-80-08-5426	Mounds
SBS	50-80-08-5427	Agricultural terrace complex
SBS	50-80-08-5428	Mounds
SBS	50-80-08-5429	Terrace/enclosure
SBS	50-80-08-5430	Mound
SBS	50-80-08-5431	Mound/L-shape
SBS	50-80-08-5432	Road alignment
SBS	50-80-08-5433	'Auwai
SBS	50-80-08-5434	Terrace/berms/'auwai
SBS	50-80-08-5435	Terrace/mounds
SBS	50-80-08-5436	Mounds/terraces
SBS	50-80-08-5437	Mound
SBS	50-80-08-5438	'Auwai
SBS	50-80-08-5439	Mound
SBS	50-80-08-5440	Mound
SBS	50-80-08-5441	Mound
SBS	50-80-08-5447	Terraces/'auwai
SBS	50-80-08-5448	enclosure/mounds/terrace
SBS	50-80-08-5449	Terraces/'auwai
SBS	50-80-08-5462	Roads
SBS	50-80-08-5505	Excavated ditch
SBS	50-80-08-5506	Alignment
SBS	50-80-08-5507	Rock shelter

Table 5-30
Known Cultural Resources at Schofield Barracks Military Reservation, South
Range Acquisition Area, and Wheeler Army Air Field (continued)

Location	State Site No.	Site Description
SBS	50-80-08-9528	Platform
SBW	50-80-04-0215	Haleauau heiau
SBW	50-80-04-0216	House site
SBW	50-80-04-0217	Heiau
SBW	50-80-04-5379	'Auwai
SBW	50-80-04-5380	Terraces
SBW	50-80-04-5402	Terrace
SBW	50-80-04-5403	Field terrace complex
SBW	50-80-04-5404	Field terraces
SBW	50-80-04-5405	Field terraces
SBW	50-80-04-5406	Field terraces
SBW	50-80-04-5442	Alignments
SBW	50-80-04-5445	Terrace/mound agricultural complex
SBW	50-80-04-5446	Terraced field complex
SBW	50-80-04-5502	Wall
SBW	50-80-04-5503	Walled/terrace fields and berm
SBW	50-80-04-5512	Excavated ditch
SBW	50-80-04-5513	Irrigation field system
SBW	50-80-04-5514	Mound and enclosure
SBW	50-80-04-5515	Mound
SBW	50-80-04-5516	Mound
SBW	50-80-04-5517	Mounds
SBW	50-80-04-5518	Wall
SBW	50-80-08-0213	Kumakali'i heiau
SBW	50-80-08-5381	Terraces
SBW	50-80-08-5443	Tunnel
SBW	50-80-08-5444	Terrace/align
SBW	50-80-08-9516	Trail
SBW	50-80-08-9527	Walled/terrace
<u>SBW</u>	<u>*50-80-04-215</u>	<u>Hale'au'au heiau</u>
<u>SBW</u>	<u>*50-80-04-216</u>	<u>Enclosure</u>
<u>SBW</u>	<u>*50-80-04-217</u>	<u>Kalena Gulch heiau</u>
<u>SBW</u>	<u>50-80-04-5379</u>	<u>Excavated ditch</u>
<u>SBW</u>	<u>50-80-04-5380</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-08-5381</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-08-5392</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-08-5393</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-08-5394</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-08-5395</u>	<u>Alignment</u>
<u>SBW</u>	<u>50-80-08-5396</u>	<u>Excavated ditch</u>
<u>SBW</u>	<u>50-80-08-5432</u>	<u>Alignment</u>
<u>SBW</u>	<u>50-80-08-5433</u>	<u>Excavated ditch</u>
<u>SBW</u>	<u>50-80-08-5434</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-08-5447</u>	<u>Field complex</u>

Table 5-30
Known Cultural Resources at Schofield Barracks Military Reservation, South
Range Acquisition Area, and Wheeler Army Air Field (continued)

<u>Location</u>	<u>State Site No.</u>	<u>Site Description</u>
<u>SBW</u>	<u>50-80-08-5449</u>	<u>Field complex</u>
<u>SBW</u>	<u>50-80-04-5512</u>	<u>Excavated ditch</u>
<u>SBW</u>	<u>50-80-04-6552</u>	<u>Terrace</u>
<u>SBW</u>	<u>50-80-04-6553</u>	<u>Terrace</u>
<u>SBW</u>	<u>50-80-04-6554</u>	<u>Terrace complex</u>
<u>SBW</u>	<u>50-80-04-6555</u>	<u>Mounds</u>
<u>SBW</u>	<u>50-80-04-6556</u>	<u>Concrete structure</u>
<u>SBW</u>	<u>50-80-04-6557</u>	<u>Terrace complex</u>
<u>SBW</u>	<u>50-80-04-6558</u>	<u>Rock piling</u>
<u>SBW</u>	<u>50-80-04-6559</u>	<u>Alignment</u>
<u>SBW</u>	<u>50-80-04-6560</u>	<u>Terrace complex</u>
<u>SBW</u>	<u>50-80-04-6561</u>	<u>Terrace complex</u>
<u>SBW</u>	<u>50-80-04-6562</u>	<u>Alignment-mound complex</u>
<u>SBW</u>	<u>50-80-04-6563</u>	<u>Enclosure</u>
<u>SBW</u>	<u>50-80-04-6564</u>	<u>Terrace</u>
<u>SBW</u>	<u>50-80-04-6565</u>	<u>Terrace complex/petroglyph</u>
<u>SBW</u>	<u>50-80-04-6566</u>	<u>Ditch</u>
<u>SBW</u>	<u>50-80-04-6567</u>	<u>Retaining walls</u>
<u>SBW</u>	<u>50-80-04-6568</u>	<u>Concrete structure-rock piling</u>
<u>SBW</u>	<u>50-80-04-6569</u>	<u>Ditch</u>
<u>SBW</u>	<u>50-80-04-6570</u>	<u>Stone structure/road/ditch</u>
<u>SBW</u>	<u>50-80-04-6571</u>	<u>Retaining wall</u>
<u>SBE</u>	<u>50-80-09-0204</u>	<u>Single stone</u>
<u>SBE</u>	<u>50-80-09-5382</u>	<u>Tunnel/bunker</u>
<u>SBE</u>	<u>50-80-09-5383</u>	<u>Terrace</u>
<u>SBE</u>	<u>50-80-09-5384</u>	<u>Reservoir/ditch/tunnel</u>
<u>SBE</u>	<u>50-80-09-5411</u>	<u>Pecked boulder</u>
<u>SBE</u>	<u>50-80-09-5461</u>	<u>Concrete foundation</u>
<u>SBE</u>	<u>50-80-09-5500</u>	<u>Foundation/structure</u>
<u>SBE</u>	<u>50-80-09-5501</u>	<u>Foundations</u>
<u>SBE</u>	<u>50-80-09-5508</u>	<u>Foundation</u>
<u>SBE</u>	<u>50-80-09-5509</u>	<u>Reservoir</u>
<u>SBE</u>	<u>50-80-09-5510</u>	<u>Foundation</u>
<u>SBE</u>	<u>50-80-09-5511</u>	<u>Foundation</u>
<u>SRAA</u>	<u>9528</u>	<u>Platform</u>
<u>SRAA</u>	<u>5436</u>	<u>Terrace/mound complex</u>
<u>SRAA</u>	<u>5437</u>	<u>Mound</u>
<u>SRAA</u>	<u>5438</u>	<u>Excavated ditch</u>
<u>SRAA</u>	<u>5439</u>	<u>Mound</u>
<u>SRAA</u>	<u>5440</u>	<u>Mound</u>
<u>SRAA</u>	<u>5441</u>	<u>Mound</u>
<u>SRAA</u>	<u>50-80-08-5436</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-5437</u>	<u>Mound</u>
<u>SRAA</u>	<u>50-80-08-5438</u>	<u>Irrigation ditch</u>

Table 5-30
Known Cultural Resources at Schofield Barracks Military Reservation, South
Range Acquisition Area, and Wheeler Army Air Field *(continued)*

<u>Location</u>	<u>State Site No.</u>	<u>Site Description</u>
<u>SRAA</u>	<u>50-80-08-5439</u>	<u>Mound</u>
<u>SRAA</u>	<u>50-80-08-5440</u>	<u>Mound</u>
<u>SRAA</u>	<u>50-80-08-5441</u>	<u>Mound</u>
<u>SRAA</u>	<u>50-80-08-6462</u>	<u>Dam complex</u>
<u>SRAA</u>	<u>50-80-08-6463</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6464</u>	<u>Concrete foundation</u>
<u>SRAA</u>	<u>50-80-08-6465</u>	<u>Artifact scatter</u>
<u>SRAA</u>	<u>50-80-08-6466</u>	<u>Road retaining wall</u>
<u>SRAA</u>	<u>50-80-08-6467</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6468</u>	<u>Concrete foundations</u>
<u>SRAA</u>	<u>50-80-08-6469</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6470</u>	<u>Culvert system/ road</u>
<u>SRAA</u>	<u>50-80-08-6471</u>	<u>Road retaining wall</u>
<u>SRAA</u>	<u>50-80-08-6472</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6473</u>	<u>Wall with mounds</u>
<u>SRAA</u>	<u>50-80-08-6474</u>	<u>Building complex</u>
<u>SRAA</u>	<u>50-80-08-6475</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6476</u>	<u>Cistern</u>
<u>SRAA</u>	<u>50-80-08-6477</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6478</u>	<u>Habitation complex</u>
<u>SRAA</u>	<u>50-80-08-6479</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6480</u>	<u>Cistern</u>
<u>SRAA</u>	<u>50-80-08-6481</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6482</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6483</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6484</u>	<u>Mound complex</u>
<u>SRAA</u>	<u>50-80-08-6485</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6486</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6487</u>	<u>Enclosure</u>
<u>SRAA</u>	<u>50-80-08-6488</u>	<u>Mound complex</u>
<u>SRAA</u>	<u>50-80-08-6489</u>	<u>Retaining wall</u>
<u>SRAA</u>	<u>50-80-08-6490</u>	<u>Wall</u>
<u>SRAA</u>	<u>50-80-08-6491</u>	<u>Mound complex</u>
<u>SRAA</u>	<u>50-80-08-6492</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6493</u>	<u>Platform</u>
<u>SRAA</u>	<u>50-80-08-6494</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-6495</u>	<u>Building complex</u>
<u>SRAA</u>	<u>50-80-08-6496</u>	<u>Mound</u>
<u>SRAA</u>	<u>50-80-08-6497</u>	<u>Complex</u>
<u>SRAA</u>	<u>50-80-08-6498</u>	<u>Alignment</u>

Table 5-30
Known Cultural Resources at Schofield Barracks Military Reservation, South
Range Acquisition Area, and Wheeler Army Air Field *(continued)*

Location	State Site No.	Site Description
<u>SRAA</u>	<u>50-80-08-t100</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-t101</u>	<u>Feature complex</u>
<u>SRAA</u>	<u>50-80-08-t102</u>	<u>Feature complex</u>
WAAF	N/A	Historic landmark
WAAF	N/A	Historic district

Notes: SBS = Schofield Barracks South Range; SBE = Schofield Barracks East Range; SBW = Schofield Barracks West Range; SBMR = Cantonment area.

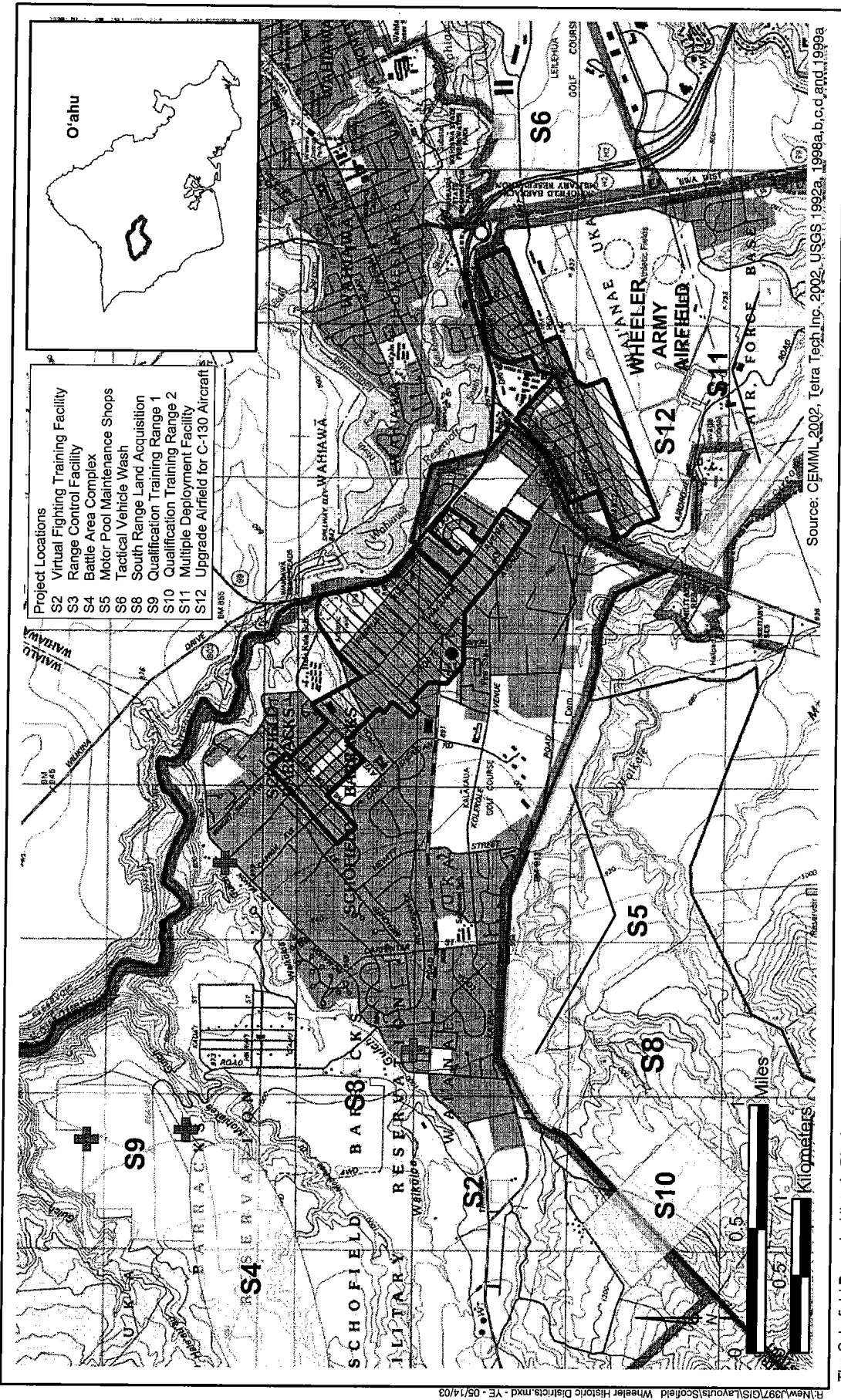
* Recent surveys could not re-locate these sites.

Source: IARII 2003; GANDA 2003e

Archaeological sites dating to the military use of the cantonment include three underground structures, a deposit of 20th century trash along the upper edge of Wai'eli gulch (Bouthillier et al. 1995), railroad remains northwest of McMahan Road (McIntosh et al. 1995a), a terrace facing of large angular basalt boulders at the edge of Wai'eli Stream at the southern edge of Martines Field (Williams et al. 1995), and a buried 5-cm-thick basalt gravel and asphalt paving, located along Wilson Avenue near its intersection with Cadet Sheridan Road (Tomonari-Tuggle 1997, 52-53). Five archaeological sites have been identified within the cantonment area, all of them related to military use of the property (IARII 2003). These have not been recommended as eligible to the NRHP. The four intensive surveys covering 177 acres (71.6 hectares) of the cantonment area recorded no prehistoric sites.

SBER is evaluated as an area of low probability for archaeological resources because much of it has been affected by erosion and ground disturbing activities and unaffected areas yielded few archaeological sites (Anderson 1998, 3-39). Pedestrian surveys documented 11 archaeological sites in SBER: two Native Hawaiian sites (a pecked boulder and a terrace with aligned stones) and nine historic military sites (three small complexes of structures, one concrete structure, three concrete foundations, a tunnel/bunker, and a reservoir/ditch/tunnel complex) (Robins and Spear 2002a, 8-9, 2002b, 8). All sites are recommended as eligible for National Register listing under criterion D.

Twenty-nine archaeological sites have been identified in the Schofield Barracks West Range (Robins and Spear 2002b). Of these, 24 are prehistoric and early historic Native Hawaiian sites, two are Native Hawaiian historic period sites, two are historic sites, and one is of unknown age. The sites of Native Hawaiian origin include heiau, agricultural terraces, 'auwai (irrigation channels), fishponds, enclosures, stone alignments, and roads. Most are located in the stream gulches. Robins and Spear (2002a, 2002b) recommend that all 29 sites be considered eligible for NRHP listing.



**Historic Districts at
Schofield Barracks Military Reservation
and Wheeler Army Airfield**

O'ahu, Hawaii

Figure 5-41

The Schofield Barracks Historic District includes 176 contributing buildings as well as 10 other contributing sites, structures, and objects.

The SRAA has been completely surveyed for the presence of cultural resources. A large portion of the land in the eastern and southern portions of the parcel is under intensive pineapple cultivation. Seven sites had been previously recorded in the SRAA. Rosendahl (1977) recorded Site 50-80-08-9528, a possible historic platform. Robins and Spear (2002a, 198-203) recorded Sites 50-80-08-5436 to -5441, which consist of dry land agricultural mounds and terraces. These sites are associated with late prehistoric agricultural activities and possibly with cattle ranching. In 2002, GANDA completed survey work in the SRAA and identified forty-six sites (GANDA 2002b).

The Schofield Barracks South Range has a total of 53 known archaeological sites. These consist of 45 traditional Native Hawaiian prehistoric or early historic sites, five historic period sites, one military site, and two sites of unknown period. Most sites are located in the stream gulches where they are at least partially protected from the impact of training activities on the plateau lands above (Anderson 1998, Robins and Spear 2002a, 2002b). While investigating sites recorded in previous archaeological work, IARII discovered three additional sites.

BAX / QTR 1 / McCarthy Flats

A survey in 2003 (GANDA 2003e) revealed twenty new sites in the BAX/QTR1 project area. Three previously recorded sites (50-80-04-215, -216, and -217) could not be re-located. This brings the total of sites identified to 34, including the 14 previously identified sites. Thirteen of the newly discovered sites appear to be traditional Hawaiian, with four possibly dating to the historic era. Tentative functional determinations include habitation (Sites 6561, 6565 and 6568), irrigation (Site 6566), animal husbandry (Site 6563), and wetland and dryland agriculture (Sites 6552, 6554, 6555, 6557, 6559, 6560, 6562, 6564, and 6565). Petroglyphs were also identified at Site 6565 adjacent to a habitation structure. The Site 6560 complex was not recorded during the survey because it is in an area deemed off-limits due to the presence of high explosive 40mm ordnance. Several isolated artifacts were collected from the upper plateaus, including three poi pounders, two *ulu maika* (gaming stones), and an adz fragment.

The remaining seven sites are from the historic period: an irrigation ditch (Site 6569), erosion control walls (Sites 6567 and 6571), a WWII military bunker (Site 6556), and roads (Sites 6553 and 6570). Site 6570 also includes a water collection or distribution station. Site 6558 is a remnant stone structure containing historically cut stones.

Of the 34 sites, four wetland agricultural complexes (Sites 5392 to 5394 and 5396) and one wetland agricultural complex in Hale'au'au Gulch (Site 6565) are recommended for preservation. The remaining 29 sites are recommended for additional work to determine significance.

Wheeler Army Airfield

WAAF contains a National Historic Landmark, which includes a portion of the apron, a barracks building, five hangars, and one support facility (Figure 5-41). All housing at WAAF dating from 1932 to 1950 has been found to be NRHP eligible. An NRHP nomination form has been prepared for the Wheeler Historic District, which includes 242 eligible buildings.

Five historic archaeological sites have been identified on the installation; one is considered eligible for the NRHP (Tomonari-Tuggle and Bouthillier 1994). Surveys at WAAF to upgrade it for C130 Aircraft (S14) and at the Multiple Deployment Facility (S13) did not reveal any cultural resources.

Helemanō Trail

Recent survey work by GANDA in 2003 did not reveal any archaeological sites within or near the HMR easement. Sites in the general area were recorded by Fankhauser who found historic agriculture and historic communication sites having to do with HMR's use as a communication facility during World War II. Although no sites or other cultural resources within the estimated boundaries of the Helemanō Trail easement are known, Fankhauser did record an earth oven exposed in a plantation irrigation trench outside of HMR (Fankhauser 1987).

Potential for Unknown Resources

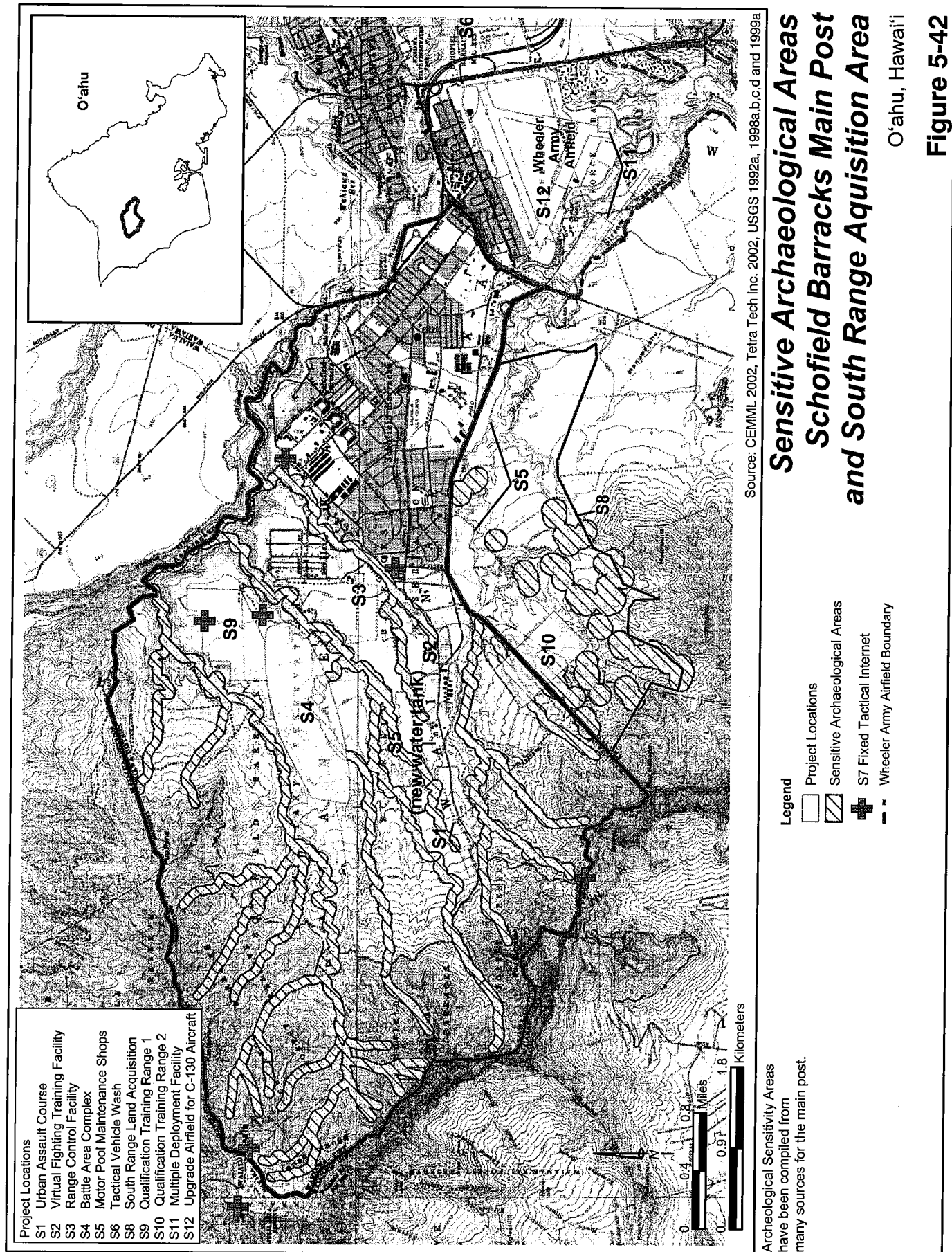
Archaeological sensitivity maps of SBMR have been compiled from several sources (Figures 5-42, 5-43). Possible railroad tracks are located to the northwest of McMahon Road on the upper edge of Waikōloa Gulch (IARII 2003). The whole northern edge of the SBMR cantonment area, including the McMahon parcel, is identified as a potentially sensitive archaeological area. Both Belt Collins (2000b) and Tomonari-Tuggle (1997) identify undeveloped portions of Kaukonahua Gulch within the Schofield Barracks cantonment area as an archaeologically sensitive area (IARII 2003). A 1911 map reproduced in Robins and Spear (2002a, Figure 17, from Gomes [1911]) indicates that there is a burial site in Kaukonahua Gulch; any surveys in that area should include oral historical research on the possibility of burials (IARII 2003).

5.11.2 Environmental Consequences

Summary of Impacts

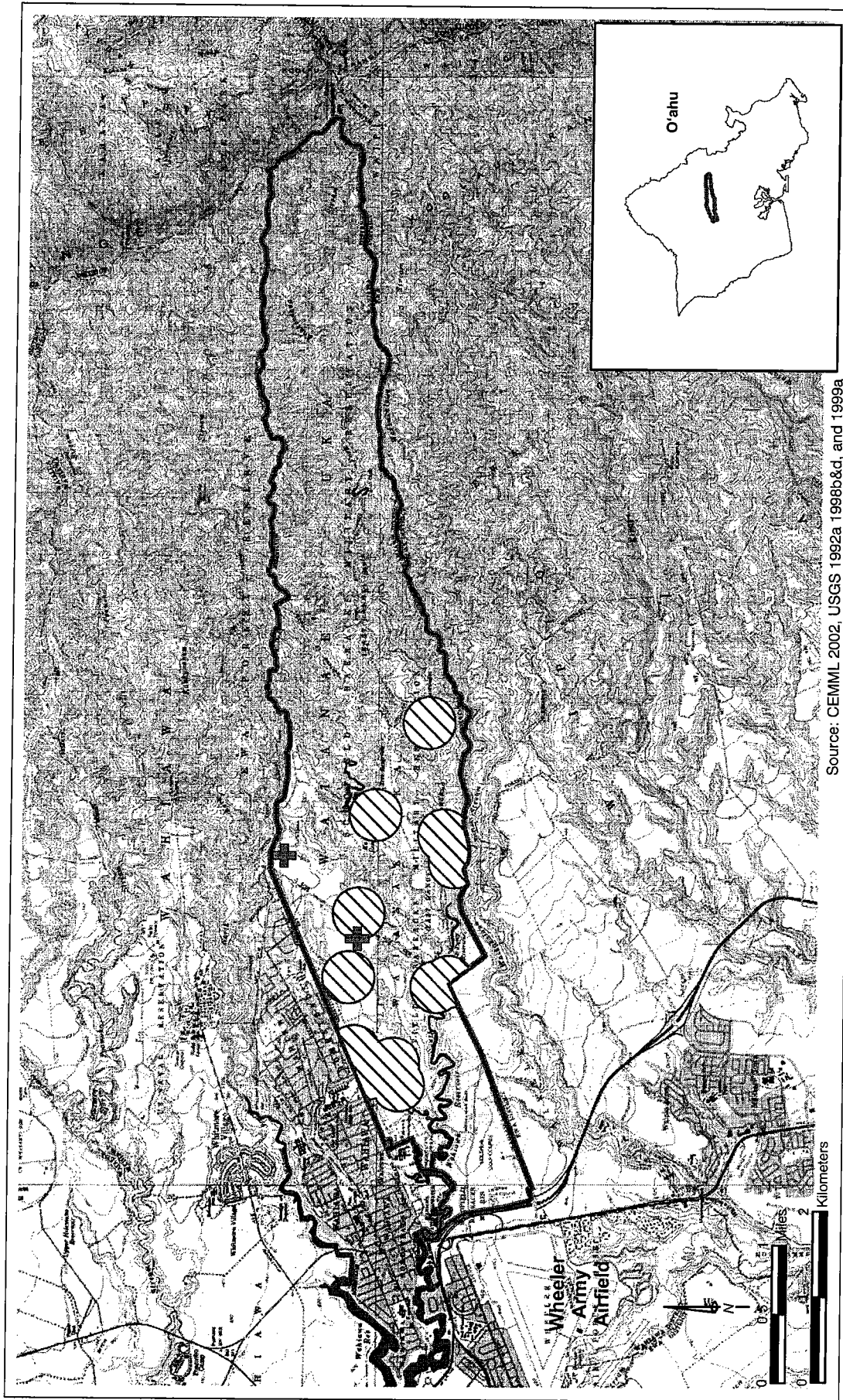
Table 5-31 summarizes impacts on cultural resources. Significant impacts on archaeological resources would occur from range and facility construction and from training activities. Additional significant impacts on ATIs would occur from facility construction and use of the SRAA for training activities. The significant impacts primarily relate to the construction phase of SBCT-related projects and range uses in the West and South ranges, the BAX, and the SRAA. As explained in the mitigation sections below, the severity of these impacts will be mitigated by implementing the PA found in Appendix J.

Mitigation measures include surveys, avoidance of archaeological sites and properties of importance to Native Hawaiians. Mitigation measures for demolition of or damage to eligible historic buildings will include following the Secretary of the Interior's standards during rehabilitation or documentation of eligible buildings in compliance with established federal standards.



Archeological Sensitivity Areas have been compiled from many sources for the main post.

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Archaeological Sensitivity Areas Schofield Barracks East Range

O'ahu, Hawaii'i

Figure 5-43